WHAT IS CLAIMED IS:

1. A variable resistance circuit comprising:

a resistor unit having a plurality of resistors series-connected between an input terminal and a predetermined potential terminal, and a switch group including a plurality of switches each having one end connected to a node between the input terminal and the resistor, a node between the resistors, or a node between the resistor and the predetermined potential terminal, and the other end connected to an output terminal; and

a switch control circuit which supplies a control signal to the switch group,

wherein an attenuation step is generated by supplying the control signal to a pair of adjacent switches included in the switch group so as to complementarily, periodically turning on/off the pair of switches at a duty of a/b (a and b are positive integers which satisfy a < b) for one switch and a duty of (b-a)/b for the other switch.

2. A circuit according to claim 1, further comprising resistors each connected between each switch included in the switch group, and a node between the input terminal and the resistor, a node between the resistors, or a node between the resistor and the predetermined potential terminal,

wherein the attenuation step is generated by supplying the control signal to the pair of adjacent switches included in the switch group so as to simultaneously turn on the pair of switches, or while keeping on one switch, turn on/off the other switch at the duty of a/b (a and b are positive integers which satisfy a < b).

3. A circuit according to claim 1, wherein a cycle in which said one switch and/or said other switch are turned on/off is smaller than a reciprocal of an audio frequency.

4. A circuit according to claim 3, wherein said switching control circuit comprises

a conversion circuit which receives at least two input data and converts the two input data into at least three output data, and

a decoder which receives the output data, generates the switching control signal, and outputs the switching control signal.

5. A circuit according to claim 4, wherein the resistor is connected to at least one portion between one end of a first switch and a node between the input terminal and one end of a first resistor, or between one end of a second switch and a node between the other end of the first resistor and the predetermined potential terminal.

6. A circuit according to claim 3, wherein the resistor is connected to at least one portion between one end of a first switch and a node between the input terminal and one end of a first resistor, or between one end of a second switch and a node between the other end of the first resistor and the predetermined potential terminal.

7. A circuit according to claim 1, wherein said switching control circuit comprises

a conversion circuit which receives at least two input data and converts the two input data into at least three output data, and

a decoder which receives the output data, generates

the switching control signal, and outputs the switching control signal.

8. A circuit according to claim 1, wherein the resistor is connected to at least one portion between one end of a first switch and a node between the input terminal and one end of a first resistor, or between one end of a second switch and a node between the other end of the first resistor and the predetermined potential terminal.

9. A variable resistance circuit comprising:

a resistor unit having

first, second,..., (n-1)th (n is an integer of not less than 3) resistors which are series-connected between an input terminal and a predetermined potential terminal, and

first, second,..., nth switches each having one end connected to a node between the input terminal and one end of the first resistor, a node between the other end of the first resistor and one end of the second resistor,..., a node between the other end of the (n-2)th resistor and one end of the (n-1)th resistor, or a node between the other end of the (n-1)th resistor and the predetermined potential terminal, and the other end connected to an output terminal; and

a switching control circuit which generates a switching control signal for controlling ON/OFF states of the first, second,..., nth switches and supplies the switching control signal to the first, second,..., nth switches,

wherein in addition to n attenuation steps obtained by turning on any one of the first, second,..., (n-1)th switches, said switching control circuit generates m (m is a positive integer) additional attenuation steps by supplying, to the first, second,..., and nth switches,

the switching control signal for complementarily, periodically turning on/off one switch at a duty of a/b (a and b are positive integers which satisfy a < b) and the other switch at a duty of (b-a)/b out of each of pairs of the first and second adjacent switches, the second and third adjacent switches,..., the (n-1)th and nth adjacent switches, and obtaining an attenuation amount calculated by internally dividing an attenuation amount x upon turning on only said one switch and an attenuation amount y upon turning on only said other switch at a : (b-a).

10. A circuit according to claim 9, wherein a cycle in which said one switch and/or said other switch are turned on/off is smaller than a reciprocal of an audio frequency.

11. A circuit according to claim 10, wherein said switching control circuit comprises

a conversion circuit which receives at least n input data and converts the at least n input data into at least n+m output data, and

a decoder which receives the output data, generates the switching control signal, and outputs the switching control signal.

12. A circuit according to claim 11, wherein the resistor is connected to at least one portion between one end of the first switch and a node between the input terminal and one end of the first resistor, between one end of the second switch and a node between the other end of the first resistor and one end of the second resistor,..., between one end of the (n-1)th switch and a node between the other end of the (n-2)th resistor and one end of the (n-1)th resistor, or between one end of the nth switch and a node between the other end of the

(n-1)th resistor and the predetermined potential terminal.

13. A circuit according to claim 10, wherein the resistor is connected to at least one portion between one end of the first switch and a node between the input terminal and one end of the first resistor, between one end of the second switch and a node between the other end of the first resistor and one end of the second resistor,..., between one end of the (n-1)th switch and a node between the other end of the (n-2)th resistor and one end of the (n-1)th resistor, or between one end of the nth switch and a node between the other end of the (n-1)th resistor and the predetermined potential terminal.

14. A circuit according to claim 9, wherein said switching control circuit comprises

a conversion circuit which receives at least n input data and converts the at least n input data into at least n+m output data, and

a decoder which receives the output data, generates the switching control signal, and outputs the switching control signal.

15. A circuit according to claim 14, wherein the resistor is connected to at least one portion between one end of the first switch and a node between the input terminal and one end of the first resistor, between one end of the second switch and a node between the other end of the first resistor and one end of the second resistor,..., between one end of the (n-1)th switch and a node between the other end of the (n-2)th resistor and one end of the (n-1)th resistor, or between one end of the nth switch and a node between the other end of the (n-1)th resistor and the predetermined potential

terminal.

16. A circuit according to claim 9, wherein the resistor is connected to at least one portion between one end of the first switch and a node between the input terminal and one end of the first resistor, between one end of the second switch and a node between the other end of the first resistor and one end of the second resistor,..., between one end of the (n-1)th switch and a node between the other end of the (n-2)th resistor and one end of the (n-1)th resistor, or between one end of the nth switch and a node between the other end of the (n-1)th resistor and the predetermined potential terminal.

17. A variable resistance circuit comprising:

a resistor unit having

1ath, 2ath,..., (n-1)ath resistors which are series-connected between an input terminal and a predetermined potential terminal,

a 1bth resistor having one end connected to a node between the input terminal and one end of the 1ath resistor, a 2bth resistor having one end connected to a node between the other end of the 1ath resistor and one end of the 2ath resistor,..., a kbth resistor having one end connected to the other end of the (k-1)ath (k is a positive integer which satisfies $k < n-1$) resistor and one end of the ka resistor, and

first, second,..., nth switches each having one end connected to the other end of the 1bth resistor, the other end of the 2bth resistor,..., the other end of the kbth resistor, a node between the other end of the kath resistor and one end of the (k+1)ath resistor, ..., or a node between the other end of the (n-1)ath resistor and the predetermined potential terminal, and the other end connected to an output terminal; and

a switching control circuit which generates a switching control signal for controlling ON/OFF states of the first, second,..., nth switches and supplies the switching control signal to the first, second,..., nth switches,

wherein letting x be an attenuation amount upon turning on only one switch and y be an attenuation amount upon turning on only the other switch out of each of pairs of the first and second adjacent switches, the second and third adjacent switches,..., the (k-1)th and kth adjacent switches, said switching control circuit supplies the switching control signal to the first, second,..., nth switches so as to simultaneously turn on said one switch and said other switch, while turning on said one switch, periodically turn on/off said other switch at a duty of a/b, or periodically turn on/off said one switch at a duty of a/b and turn on said other switch in order to obtain an intermediate attenuation amount between x and y,

letting x be the attenuation amount upon turning on only said one switch and y be the attenuation amount upon turning on only said other switch, resistance values of the 1bth, 2bth,..., kbth resistors are so set as to adjust the attenuation amount to (x+y)/2 when said one switch and said other switch are simultaneously turned on, and

an attenuation amount calculated by internally dividing the attenuation amount x and an attenuation amount (x+y)/2 at a : (b-a) is generated by turning on said one switch and periodically turning on/off said other switch at a duty of a/b, and an attenuation amount calculated by internally dividing the attenuation amount (x+y)/2 and the attenuation amount y at (b-a) : a is generated by periodically turning on/off said one switch at the duty of a/b and turning on said other switch.

18. A circuit according to claim 17, wherein a cycle in which said one switch and/or said other switch are turned on/off is smaller than a reciprocal of an audio frequency.

19. A circuit according to claim 18, wherein said switching control circuit comprises

a conversion circuit which receives at least n input data and converts the at least n input data into at least n+m(m is a positive integer) output data, and

a decoder which receives the output data, generates the switching control signal, and outputs the switching control signal.